IS THERE ANY EVIDENCE OF A VALUE-GROWTH FACTOR ON THE JOHANNESBURG STOCK EXCHANGE?

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ABSTRACT

New evidence suggests that share returns are cross-sectionally predictable in that shares which appear to be inexpensive relative to the company's underlying values (value shares), out-perform those shares that are perceived to provide substantial growth in the long run (growth shares). The magnitude of the return premium suggests that these returns are induced by factors other than risk or perhaps suggests that our measures of risk are incorrect.

There now seems to be little doubt that the new evidence indicates that the cross-section of average returns are predictable and that abnormal returns can be obtained by holding value shares. This is the value-growth phenomenon. The existence of this phenomenon casts doubt on the two major paradigms of modern finance, the Capital Asset Pricing Model and the Efficient Market Hypothesis.

There has been limited empirical testing in South Africa as to the existence of this internationally observed phenomenon. This study's objective is to investigate whether or not this value-growth phenomenon exists on the JSE.

The study examined monthly excess returns on portfolios of value and growth shares over the period 1987 to 1996. The ratio of a company's market value to its book value of common equity was used as the measure of value and growth.

The conclusions of this research study indicate that a value-growth phenomenon does exist on the JSE and that the existence of superior returns by value shares is especially marked in the period post 1992 when South Africa returned to the international financial arena.

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CHAPTER 1

INTRODUCTION

1.1 Background

The financial theory of investment is based on two major paradigms. Firstly from the Capital Asset Pricing Model (CAPM) is the theory that returns are positively related to systematic risk. Secondly, from the Efficient Market Hypothesis (EMH) comes the contention that capital markets are efficient and that share prices fully reflect all available information, including that relating to the risk of the share.

Early empirical evidence (see for example; Black, Jensen and Scholes, 1972; Fama, 1970; Fama and Macbeth, 1973) appeared to provide support for both the CAPM and the EMH and therefore suggest that it is not possible for investors to consistently earn above average returns. Notwithstanding the theory and its empirical support, equity investment managers and analysts, in trying to enhance client returns, have in the last 50 years pursued various investment strategies which they believe can outperform the market. The persistence of these strategies would seem to suggest that the practitioners believe that above average returns are possible and that the two theories of finance must exhibit some exploitable anomalies.

More recent extensive testing of the CAPM and the EMH seems to suggest that share returns can be predicted by factors which are inconsistent with the CAPM and that anomalies in the theoretical model may allow for strategies which provide above average returns (see for example; Fama and French, 1992; Haugen, 1996).

One of these strategies is value investing, a strategy to buy shares that appear to be inexpensive relative to some fundamental current measure (i.e. value shares). The opposite of value investing is growth investing, a strategy of investing in shares which appear to have substantial growth prospects (i.e. growth shares).

Therefore the value-growth factor proposition is that investing in value shares produces above average returns which are enduring and that the benefits are obtained globally (Capaul et al, 1993). Empirical tests in the US and globally have shown that value shares outperform growth shares (see Section 2.4 of the Literature Review).

1.2 Statement of the Problem and Research Objective

The primary goal of the firm is to maximise the wealth of shareholders (Copeland and Westland, 1992, p.18). To achieve this goal the financial manager must make decisions with respect to, the firm's investments, the manner in which these investments are financed and the distribution of the net cashflows resulting from these investments (i.e. dividends). These decision making processes are underpinned by the two major theoretical models of modern finance, the CAPM and the EMH.

New evidence suggests that share returns are cross-sectionally predictable in that shares which appear to be inexpensive relative to the company's underlying values (value shares) out-perform those shares that are perceived to provide substantial growth in the long run (growth shares) (see for example; Capaul et al, 1993; Fama and French, 1992; Haugen, 1996). The magnitude of the return premium suggests that these returns are induced by factors other than risk or perhaps suggests that our measures of risk are incorrect. The evidence therefore suggests that returns are not

positively related to risk and that markets appear to be inefficient. These findings cast doubt on the validity of the two major paradigms of financial theory, the CAPM and the EMH. This in turn would mean that the current theory and practice of corporate finance would need to be revised.

Furthermore, any evidence of a value-growth factor would allow fund managers and analysts to select an investment approach that will consistently outperform the market and thereby enhance client returns.

To effectively fulfil their roles academics and practitioners in the field of finance in South Africa need to know if this internationally observed phenomenon is apparent on the local markets. However, no empirical testing has been conducted in South Africa to specifically determine whether or not there is any evidence of a value-growth phenomenon on the JSE.

In order to address this neglected area of research, the objective of this study is therefore to determine whether or not the value-growth phenomenon is evident in South Africa. The methodology used to establish this, is detailed in Chapter 3.

1.3 Report Structure

The report is contained in the next four chapters. In Chapter 2 the paradigms of modern finance are discussed, the concept of the value-growth phenomenon is expanded upon and the results of the literature search are outlined.

Chapter 3 reviews the methodologies used in two similar value-growth studies (one US and one global) and discusses the various measures of value and growth that can be used. In addition the data coverage, portfolio construction and specific methodologies used in this study are reviewed.

Chapter 4 reports the results of the study, compares the results to the two international studies and discusses the implication of the results. Finally in Chapter 5, conclusions are drawn and areas for possible further research are suggested.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Early empirical evidence seemed to provide support for the two major paradigms of financial theory, the Capital Asset Pricing Model and the Efficient Market Hypothesis. Recent studies (see for example; Haugen, 1996) have questioned the validity of the two paradigms and suggest that anomalies in asset pricing may exist. Furthermore, it has been shown empirically that the pursuit of certain investment strategies can produce above average returns. What is not yet clear however, is the nature of these returns.

This chapter outlines the paradigms of modern finance, introduces the value-growth phenomenon and briefly reviews the literature covering evidence of empirical contradictions of the paradigms of financial theory. Finally, possible causes of the value-growth factor are presented

2.2 Paradigms of Modern Finance

The underpinnings of modern financial theory are embodied in two major paradigms, which together form the basis of much of what is taught and practised in the field of finance. These are the Capital Asset Pricing Model and the Efficient Market Hypothesis.

Harry Markowitz (1952) showed that it was possible to build portfolios of shares that have the lowest possible risk, measured by the standard deviation of expected return,

for any given expected return. This led to the development of the Markowitz portfolio model which enabled investors to construct optimal share portfolios, based on their risk-return preferences. This early model did not however, directly explain the way in which assets would be priced on the market.

The Markowitz portfolio model was further developed, by Sharpe (1964), Lintner (1965) and Mossin (1966), to derive a general theory of asset pricing, by introducing a risk-free asset into the Markowitz portfolio model. This led to the concept of a Capital Market Line, a risk-return continuum along which all investors would place themselves depending on their risk preferences. Consequently it is possible to calculate a systematic risk measure for an individual asset, known as β. Knowing the asset's systematic risk or β, it is then possible to determine the expected return on the asset.

This positive theory is known as the Capital Asset Pricing Model (CAPM) and is written as:

$$E(Ri) = rf + \beta i[E(Rm) - rf]$$

where:

E(Ri) = the expected return on security i.

E(Rm) = the expected return on the market of all assets.

rf = the risk-free rate.

βi = covariance (Ri ;Rm) / variance (Rm).

The main prediction of the CAPM is that, expected returns are positively related to market risk (β) and that β, to the exclusion of all other variables, adequately describes the cross-section of market returns.

Early testing of the CAPM on the NYSE (see for example; Black, Jensen and Scholes, 1972; Fama and Macbeth, 1973) found general support for the CAPM and the positive relationship between systematic risk and rates of return.

The second major paradigm of modern finance is that of the Efficient Market Hypothesis (EMH), a contention developed by Fama (1970) that, share prices accurately reflect all information, including the risk involved in holding that share, that is available at any point in time. According to the EMH it should therefore not be possible for an investor to consistently outperform the market.

The EMH has not received the same general level of support as the CAPM and various inefficiencies involving for example, size effects (Banz, 1981), seasonal effects (Roll, 1983) and neglected firm effects (Arbel and Strebel, 1983) have been identified. Le Roy (1989) concludes that the results of the large number of studies on the EMH have damaged its reputation. Thaler (1987) points out however, that few of the anomalies identified by the studies on the EMH are exploitable by investors.

The CAPM assumes that capital markets are efficient and thus any evidence that markets are inefficient would invalidate the CAPM. Furthermore, market efficiency is specified in terms of the risk-return relationship specified by the CAPM. Thus the

CAPM and the EMH are 'joint and inseparable hypotheses' (Copeland and Weston, 1992, p.351), and therefore invalidating one would necessarily invalidate the other.

2.3 The Value - Growth Phenomenon

Notwithstanding the CAPM and the EMH and their early empirical support, equity investment managers and analysts, in trying to enhance client returns, pursue various investment strategies which are believed to outperform the market. This is evidenced by the existence of the large number of fund managers whose investment strategies are something other than portfolios run like index funds. The persistence of these strategies would seem to suggest that the practitioners believe that above average returns are possible and that financial theory must exhibit some exploitable anomalies. One such strategy is that of value investing.

Investors have for decades used the term 'value investing' to identify strategies of buying shares which appear to provide high current income and/or appear inexpensive relative to some fundamental measure[1]. Similarly, the term 'growth investing' has been used to identify buying strategies which favour those shares (sometimes called 'glamour shares') which appear to have substantial growth prospects (Capaul et al, 1993). The separation of investors into those pursuing growth or value styles of investing has divided investment managers and analysts into two fundamentally different schools.

[1] For example, Forbes publishes a weekly S&P Value Index which has become the most commonly accepted value benchmark in the US.

This debate between value and growth is not new. As long ago as 1934 Graham and Dodd in their book, Security Analysis, felt that growth was largely unpredictable and that investment should only be related to demonstrated performance (Haugen, 1995, p.38). Investors should therefore only acquire shares that are underpriced in terms of their cost.[2] Value investing was the predominant investment method throughout the 1950's but during the 1960's growth share investing emerged with the belief that the future rate of growth of earnings and dividends could be predicted.

Given the CAPM and the EMH, value investing should not be able to produce above average returns as there should be no fundamental variables other than risk which determine the cross-section of average returns.

2.4 Empirical Studies

Following from the CAPM and the EMH is the prediction that all shares should lie along a line that positively relates the expected rate of return to market risk. Much empirical research has been conducted in the US and elsewhere, to try and identify alternative predictors of risk-adjusted rates of return and in so doing, find evidence against the CAPM and/or the EMH.

Much recent evidence (see sections 2.4.1 to 2.4.3 below) seems to suggest that share returns can be predicted by factors that are inconsistent with the two accepted paradigms of finance, the CAPM and the EMH. Variables which have been shown

[2] Klerck and Maritz (1997) tested certain combinations of Graham's share selection criteria on the JSE. Their results indicated that these selection criteria would have produced portfolios with superior returns relative to the industrial index during the period 1977 to 1994.

empirically to have explanatory power in predicting the cross-section of share market returns include:

- Size (ME): a firm's market equity, (a share's price times shares outstanding).
- Earnings-price ratio (E/P): the ratio of a firm's earnings per share to its market price.
- Book-Market ratio (BE/ME): the ratio of a firm's book value of common equity, (BE), to its market value, (ME).
- Leverage: measured by a firm's debt/equity ratio.
- Dividend yield: the ratio of a firm's dividend per share to its market price.

These variables are discussed in detail in section 2.4.1.

Whilst many of the studies do not specifically refer to the value-growth concept, any evidence that there are alternative predictors of risk-adjusted returns would allow for the possible existence of a value-growth phenomenon. The above variables which can be specifically regarded as indicating either value or growth are E/P and BE/ME. Both these variables relate the accounting or book value of a share (worth) to its market value (cost) and thereby indicate its relative attractiveness in value investing terms.

Much of the empirical evidence in this area has emerged from the US and is reviewed in section 2.4.1. below. A limited number of studies have been conducted using non-US and South African shares and these are reviewed in sections 2.4.2 and 2.4.3 respectively.

2.4.1 United States

Banz (1981) examined the relationship between the total market value of a firm's common share and its return and was able to identify a size effect based on market equity (ME). He found on average, that smaller firms had higher risk adjusted returns than larger firms, over a 40 year period to 1975. He was unable to say whether size per se was responsible or whether size was a proxy for other factors which may be correlated with size. He nonetheless concluded that this was evidence that the CAPM is mispecified.

Reinganum (1981) concluded from his tests on a composite sample of AMEX-NYSE firms, that the size effect subsumes the E/P effect and that therefore, the factors missing from the CAPM are more closely associated with size than E/P. Basu (1983) referring to earlier work by Ball (1978), that E/P's are likely to be correlated with expected returns, points out that Reinganum's (1981) results are suprising, as it would be expected that E/P would have greater explanatory power than size if the CAPM was misspecified. Basu (1983) then re-examined the relationship between E/P, firm size and returns on common shares on the NYSE using a different database to Reinganum (1981) and a different methodology which controlled for risk. Basu's findings supported those of Banz (1981) with respect to the size effect and furthermore found that on average, shares with high E/P multiples outperformed those shares with low E/P multiples. He found however that the size effect dominates the E/P effect which contradicts Reinganum's (1981) findings that the size effect subsumes the E/P effect.

Jaffe, Keim and Westerfield (1989) re-examined the size and E/P effect using improved methodologies and a longer sample period in an attempt to resolve the differences in opinion and disentangle the size effects and E/P effects. They found a significant E/P and size effect (neither of which dominates the other) when estimated across all months during the 1951 - 1986 period.

Rosenberg, Reid and Lanstein (1985) introduced a further factor into the debate and found that average returns on US shares are positively related to the ratio of a firm's book value of common equity per share (BE) to market price per share (ME).

Other variables which may help to explain the cross-section of returns have also been found. Bhandari (1988) found that leverage, measured by the debt/equity ratio, is positively related to returns when controlling for β and firm size, while Litzenberger and Ramaswamy (1979) found a positive relationship between dividend yield and share returns in the period 1936-1977. These variables do not however, have any special place in explaining the value-growth phenomena.

More recently, as Page (1996) points out, the debate about the size and earnings effects has revolved more around their relative importance and relationship to each other than around the existence of the effects themselves.

Fama and French (1992)[3] studied the joint effects of market β, size (ME), E/P ratio, leverage, and the BE/ME ratio on the cross-section of average returns on the NYSE, AMEX, and NASDAQ shares over the period 1963-1990.

Their tests do not find that average share returns are positively related to market β and therefore do not find any support for the most basic tenant of the CAPM. They did find however, that the univariate relationship between average return and size, leverage, E/P and BE/ME are strong. Furthermore, when doing multivariate tests, they find that BE/ME are both robust to the inclusion of other variables, but that BE/ME plays the stronger role in the prediction of the cross-section of average returns. Thus, Fama and French, both previous champions of the CAPM conclude that in the period 1963-1990 the two variables, size and BE/ME, "provide a simple and powerful characterisation of the cross-section of returns" (Fama and French, 1992, p.429).

The methodologies used by Fama and French (1992) are further discussed in Section 3.2 of this study.

2.4.2 Global

Some testing has been conducted on share markets situated outside of the US to establish whether or not those relationships observed in the US, as discussed in section 2.4.1 above, are apparent. Capaul, Rowley and Sharpe (1993) specifically tested for the value-growth factor in the US and five other countries. They examined the returns obtained from portfolios of high ME/BE ratios and those obtained from

[3] This study was voted the best article in the Journal of Finance in 1992 by the widest margin in history.

portfolios of shares with low ME/BE ratios for France, Germany, Switzerland, the UK, Japan, and the US over the period 1981-1992. Their results show that low ME/BE shares outperformed high ME/BE shares on average in each country during the period studied, both absolutely and adjusted for risk. Furthermore, they found that the margin by which value shares outperformed growth shares was higher in the non-US countries than in the US. They offered no suggestion for this phenomenon.

The methodologies used by Capaul et al (1993) are further discussed in Section 3.2 of this study.

Further global studies conducted by Haugen & Baker (1996), found a commonality and stability in the variables which influence the cross-section of average returns in the US, the UK, Germany, France and Japan. Furthermore, shares which had the highest returns exhibited lower risk than those with the lowest returns and they therefore concluded that the results seemed to reveal a major failure in the EMH.

2.5.3 South Africa

In South Africa, De Villiers, Lowings, Pettit and Affleck Graves (1986) identified a size effect on the JSE in that larger firms achieved higher systematic risk adjusted rates of return than smaller ones during the period 1973-1982.[4] In contrast, Bradfield and Barr (1988), while studying the JSE, found no evidence of a size effect. Neither did they find evidence of a dividend yield effect nor of a liquidity effect on returns of

[4] This is contrary to evidence on the NYSE which suggest that small market capitalisation firms outperform large market capitalisation firms (see for example Banz,1981).

the industrial and gold shares. They did however, find that market β was successful in predicting share returns.

More recently, Page and Palmer (1991) analysed companies listed on the JSE over the period 1978-1988 and found a significant relationship between E/P and returns and in support of Bradfield and Barr (1988), no evidence of a significant firm size effect. Although no statistically significant firm size effect was found, the positive direction of the effect did not disagree with the earlier findings of De Villiers et al (1986).

In his paper which reviews findings on the JSE, Bradfield (1989, p.6) concludes that, "the validity of the CAPM cannot be disputed for JSE shares". A similar review by Bhana (1994) with regard to the evidence of efficiency of the JSE, concludes that with the exception of the over-reaction hypothesis, "the evidence indicates that superior performance is all but out of reach for all but a few professional investors" (p.95). Bhana's exception of the over-reaction hypothesis is worth noting as this is one of the suggestions as to why the value-growth factor may exist. In the main however, the JSE evidence seems to contradict the US findings (Page, 1996, p.30) and suggests that those market anomalies found on the NYSE are not transferable to the JSE (Bradfield, 1989, p.6).

It is thus becoming increasingly accepted globally, albeit not yet on the JSE, that share returns are predictable by using variables other than β. Therefore, investment strategies such as value investing, which were previously in conflict with the CAPM

and the EMH, may well be in line with the emerging empirical evidence that anomalies do exist in the pricing of shares.

2.5 Possible causes of the Value-Growth Factor

There seems to be little doubt that the new evidence indicates that the cross-section of average returns are predictable and that shares with the highest expected returns are less risky than those with lowest expected returns. What is not yet clear, and indeed more controversial, is the nature of these returns. Two possible explanations have emerged in the literature. Firstly, that the high returns on value shares compensate for high fundamental risk or secondly, that the high returns indicate incorrect pricing.

Fama and French (1992), argue that size and BE/ME are proxies for hidden risk factors and that the observed high returns are therefore a result of a risk premium which is not correctly measured by the CAPM. They consequently continue to search for a more complicated asset pricing model to explain these high returns (Haugen, 1996, p.86).

A more widely held belief is that of an 'errors in expectations hypothesis', that these returns are the result of investors systematically misperceiving the future direction of share price movements. This view is held by Lakonishok, Shleifer, and Vishny (1994), who argue that value strategies work because value shares have been underpriced in relation to their risk and return characteristics for behavioural and institutional reasons. A specific behavioural explanation proposed by Lakonishok et al (1994) is that the majority of investors typically make two types of errors in pricing shares,

which consequently give rise to the value phenomenon. Firstly, they consider value shares to be more risky because they do not differentiate between systematic risk and idiosyncratic risk and secondly they become pessimistic after a series of bad earnings announcements. These errors result in value shares being underpriced, resulting in high BE/ME ratios. Subsequently, value shares outperform growth shares because the market slowly realises that earnings growth rates for value shares are higher than expected at first, and vice-versa for growth shares.

La Porta (1996), tests for the existence of these systematic errors suggested by Lakonishok et al (1994), by using survey data on forecasts by share market analysts. He finds support for the errors in expectations hypothesis in that contrarian strategies that attempt to exploit errors in analysts' forecasts earn superior returns because expectations about future growth are too extreme. His specific findings were that there is evidence that the market is overly pessimistic about low expected earnings growth shares (i.e. value shares) and that, these shares with low expected growth outperformed those with high expected growth by twenty percent in the observed period 1982-1990.

La Porta, Lakonishok, Shleifer and Vishny (1997), studied the reaction of share prices to earnings announcements for value and growth shares over a 5 year period after portfolio formation. They found that a significant portion of the difference in returns between value and growth (which they call glamour) shares was attributable to earnings surprises that were systematically more positive for value shares. They

believe that the evidence suggests that the explanation for this superior return to value shares is a result of behavioural factors, particularly expectational errors, and not risk.

2.6 Summary

The empirical evidence to date increasingly suggests that the cross-section of average share returns are predictable by using measures other than β. This evidence mainly in the US and in some other non-US markets has not yet been shown to be conclusive on the JSE by the limited South African research in this area. A number of the measures, which have been shown to have predictive power, are associated with an investment style known as value investing. No specific empirical research in South Africa appears to have investigated whether a value-growth phenomenon exists on the JSE.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The objective of this chapter is to discuss the research methodology employed, in order to satisfy the scope and objectives of the study as detailed in Chapter 1.

This includes a statement of the research hypothesis, a review of the methodologies used in two similar value-growth studies and a discussion of various measures of value and growth. The data covered and the method used to construct and evaluate portfolios are presented and finally, the limitations of the study are discussed.

3.2 Hypothesis

The hypothesis to be tested, using a quantitative approach is;

H_0 : $\mu Rv = \mu Rg$

H_1 : $\mu Rv \neq \mu Rg$

where: μRv = Mean excess returns of value shares.

μRg = Mean excess returns of growth shares.

The null hypothesis is that the mean excess returns of value shares are equal to the mean excess returns of growth shares. The alternative hypothesis is that the mean excess returns of value shares are not equal to the mean excess returns of growth shares.

3.3 Value-growth studies

This study follows, to some extent, the methodology used in two previous value-growth studies. These are the 1992 study by Fama and French of US stock markets and the 1993 study by Capaul, Rowley and Sharpe of international stock markets, both of these found clear evidence of a value-growth factor in the US and of an international value-growth factor respectively. By partially replicating the methodologies used in these two studies the results of this South African study can be compared to those found internationally .

Fama and French (1992) make no specific mention of the value-growth phenomenon in their extensive study on the evaluation of the joint roles of market β, size, E/P, leverage and book to market equity on the cross-section of average returns on NYSE, AMEX, and NASDAQ shares. However their results that, together, size and book to market equity can explain the cross-section of average stock returns over the period 1963-1990 clearly indicates a value-growth factor in the USA over this period.

Their most significant result focused on the relationship between the accounting value of the firm measured by the book value of common equity, to the market value of the firm measured by the share price. In June of each year *t* they ranked all shares on the three major USA exchanges (NYSE, AMEX and NASDAQ) using the book to market ratios for fiscal year *t*-1. Based on the rankings the shares were sorted into ten portfolios each containing an equal number of shares. The equal-weighted monthly portfolio returns were then calculated for July of year *t* to June of year *t*+1. The shares were reranked and the portfolios reformed each year in this manner. The time-series

average of the monthly equal-weighted portfolio returns over the period July 1963 to December 1990 were then calculated.

The rates of return for each of their ten portfolios over the period 1963 to 1990 are presented in Table 3.1 below.

Table 3.1: Average Monthly Returns on Portfolios Formed on Book to Market Equity: July 1963 to December 1990 - Source: Fama and French (1992).

BOOK TO MARKET RATIO (DECILE)	AVERAGE MONTHLY RETURN (%)
HIGH	1.63
9	1.50
8	1.40
7	1.39
6	1.26
5	1.24
4	1.17
3	1.06
2	0.98
LOW	0.64

The portfolio based on shares with the highest book to market ratio (i.e. most value-orientated) showed an average monthly return over the 27 year period of 1.63% and that with the lowest book to market ratio (i.e. most growth-orientated) a return of 0.64%. Furthermore, returns increase across the ten deciles representing low book to market to high book to market portfolios.[1]

Capaul, Rowley and Sharpe (1993) in their study on international value and growth stock returns test specifically for a value-growth factor in six major industrialised countries over the period 1981 to 1992. Like Fama and French (1992), they use the ratio of a stock's price to its book value as their measure of value and growth. In the US they use the existing S&P/Barra Value Stock and S&P/Barra Growth Stock Indexes to form their portfolios. In the other five countries they use indexes produced by the Union Bank of Switzerland.

The US indexes are constructed by ranking all the shares in the Standard and Poor's 500 by the ratio of their most recent price to the most recently released book value per share. The ranked shares are divided into two groups, with equal total market capitalisation, thereby forming value and growth portfolios. The monthly return for each portfolio is calculated by taking the total of the capitalisation weighted returns on each of the underlying shares. The same procedure is followed for shares in the non-US countries using the indexes produced by the Union Bank of Switzerland.

[1] In an extension of this study Haugen and Baker (1996) found that the shares in the high return decile have an unambiguously low-risk profile.

Their findings are presented in the form of value-growth spreads, which are calculated by subtracting the return on the growth index from the corresponding return on the value index. The results, presented in Table 3.2 below, show that value shares outperformed growth shares on a global basis and in each of the six countries analysed. The magnitude of the spreads are however quite different in each of the three regions (Japan, US and Europe) with the US showing the smallest spread of 15.6%.

Table 3.2: Monthly and cumulative value-growth spreads: January 1981 to June 1992 - Source: Capaul, Rowley and Sharpe (1993).

COUNTRY	AVERAGE MONTHLY SPREAD(%)	CUMULATIVE SPREAD (%)
France	0.53	73.7
Germany	0.13	17.7
Switzerland	0.31	42.7
U.K.	0.23	31.5
Japan	0.50	69.5
U.S.	0.11	15.6
Europe	0.23	31.9
Global	0.29	39.5

The study also tests whether these results were statistically significant and goes on to calculate the Sharpe ratio (a measure of return per unit of risk) for each of the indexes. The results were significant for the global spread, less significant for France, Switzerland, Japan and Europe and insignificant for Germany, the UK and the US. In every case the Sharpe ratio indicated that the value index provided superior results to both the growth index and the corresponding market index.

3.4 Measuring Value and Growth

As discussed in Section 2.4, a number of measures to distinguish between value and growth shares have been identified, with the most widely used being those that relate market data to accounting data. Examples include, the ratio of a company's share price to its accounting earnings per share or market value, to book value of common equity, being respectively Income Statement and Balance Sheet approaches.

This study uses the Balance Sheet approach, the ratio of a company's market value (measured as its share price on the JSE) to its book value of common equity (measured as its book value per share). This measure was selected as this was the variable identified by Fama and French (1992) as being the one that, along with size, explained the cross-section of average returns in the United States over the period 1963 to 1990. Furthermore, this was also the measure of growth used by Capaul et al (1993) in their study of value and growth returns in six countries. Thus, in addition to this measure of value and growth being well founded in prior research it allows the results of this study to be internationally comparable.

3.5 Data Coverage

The study examined monthly excess returns on value and growth portfolios selected from the industrial companies quoted on the Johannesburg Stock Exchange over the 10 year period January 1987 to December 1996. This time frame does not correspond exactly to that used in the Capaul et al (1993) study (which was January 1981 to June 1992) but has the advantage of using more recent data and including a period (post 1992) which includes South Africa's reacceptance into the international community. Furthermore, there is still a significant overlap of five and a half years (January 1987 to June 1992) between this study and Capaul et al's (1992) during which the results are comparable.

The mining and financial sectors were not included in this study, since companies within these sectors conduct specialised activities, use different methods of accounting and in the case of the mining sector are subject to the effects of fluctuating international commodity prices. In both these sectors the ratio of share price to book value will therefore, potentially, not have the same meaning for value and growth as for companies in the industrial sector.

A summary of the data extracted is presented in Table 3.3 below.

Table 3.3: Summary of data.

DATA	FREQUENCY	JUNE Y/E's	DEC. Y/E'S
Share price	monthly	30/06/86 to 31/12/96	31/12/85 to 31/12/96
Book value	yearly	30/06/86 to 30/06/95	31/12/85 to 31/12/94
Issued shares	yearly	30/06/86 to 30/06/95	31/12/86 to 31/12/96

The initial sample included all 165 industrial companies with June and December year-ends, listed in McGregors Who Owns Whom (1997). These two months account for approximately 28% and 20% respectively, of financial year-ends of all companies on the JSE. These two specific months were chosen to provide a sufficiently large sample size for analysis while minimising the variation in the gap between the accounting data and the returns they explained. In this study the gap between the date of portfolio construction and the beginning of the period during which returns were measured was thus either six months for June year-end companies or twelve months for December year-end companies.

From this initial sample of 165 companies, 107 companies were eliminated for the following reasons; did not have a full data history, had changed their year-ends, had undergone major structural change, were holding companies in a pyramid structure or reported financial information in foreign currencies during the period under review. After these eliminations, the final sample contained 58 companies, 35 with a June year-end and 23 with a December year-end. These are listed in Appendix A.

3.6 Portfolio Construction

At 30 June of year *t*, each company in the sample was ranked according to the ratio of its share price at 30 June of year *t* to its book value per share at 30 June of year *t* for those companies with June year-ends or 31 December of year *t*-1 for December year-end companies. A dividing line was drawn so that a similar number of companies were above and below the line. Those above the dividing line formed the portfolio of growth shares (high price/book ratio) and those below formed the value portfolio (low

price/book ratio). This approach does not bias between larger and smaller companies and has been widely used in similar studies (see for example; French and Fama (1992)). Portfolios were reformed in this manner each year for the 10 year period 1986 to 1995.

A variation of the above portfolio selection was performed to allow comparison of the results with those of Capaul et al's (1993) international study. The ranked shares were divided into equal capitalisation portfolios in line with Capaul et al's (1993) methodology (p.28) so that portfolios of growth and value shares were formed by drawing the dividing line so that the market capitalisation of shares in the growth portfolio was similar to that of the value portfolio. Market capitalisations used for the weighting were calculated at 31 December each year by multiplying the share price at 31 December by the number of outstanding ordinary shares at that date.

3.7 Returns and Excess Returns

The monthly returns for all companies in the growth and value portfolios for calendar year *t* (1987 - 1996) formed at year *t*-1 were calculated using the formula:

$$R_m = (P_m - P_{m-1}) / P_{m-1}$$

where: R_m = Return on share in month m

P_m = Share price at end of month m

P_{m-1} = Share price at end of month m - 1

All returns were adjusted for share splits, capitalisation issues, etc. Dividends were ignored in line with several prior South African studies (see for example; Page and Palmer, 1991) as their effect has been shown to be minimal.

The excess monthly return for each company was calculated using the formula:

$$U_{i,m} = R_{i,m} - RFR_m$$

where: $U_{i,m}$ = Excess monthly return on share i

$R_{i,m}$ = Actual return on share i in month m

RFR_m = The risk free rate in month m

The excess return is thus the difference between the return on the share and the return on a riskless asset.

In comparative overseas studies, for example Capaul et al (1993), the Treasury Bill rate is used as a proxy for the risk free rate. In South Africa, Bankers' Acceptances are considered to be more liquid than Treasury Bills as in the past Treasury Bills were prescribed liquid asset requirements for life offices and pension funds (Ross, Westerfield, Jordan and Firer, 1996, p.279). This study therefore uses the 90 day Bankers' Acceptance rate which, because of its liquidity, is considered to be a better proxy for the risk free rate in South Africa. This approach is consistent with several prior South African studies (see for example; Page and Palmer, 1991).

The mean monthly excess return on each of the growth and value portfolios for each of the years 1987 to 1996 was calculated. This was performed for both the equal weighted portfolios and the capitalisation weighted portfolios. The monthly excess

return for the capitalisation weighted portfolios was calculated by taking a weighted average (based on market capitalisation) of the returns on the underlying securities. The two sets of results are shown in Tables 4.1 and 4.2.

The *t*-statistic and the associated *p* value (showing the probability of a Type I error) was calculated for each of the years observed to test the null hypothesis that the mean average monthly returns on the growth and value portfolios are equal. These can be seen in Tables 4.1 and 4.2. The *t*-statistics and *p* values were calculated using the Excel spreadsheet package.

3.8 Value-Growth Spreads

A value-growth spread was computed by subtracting the mean cumulative excess return on the growth shares from the corresponding value stock mean cumulative excess return. The results, presented in Table 4.3 and plotted in Figures 4.1 and 4.2, can be considered to be the advantage from holding value shares rather than growth shares.

3.9 Period Returns

Further tests were conducted to establish whether or not excess returns on equal weighted value and growth portfolios were significantly different when portfolios were reformed less often than one year. This would indicate the extent to which a lag may exist between the time a stock is classified as being either value or growth and the period in which excess returns become apparent. The study calculated the excess returns resulting from the use of three separate portfolio reconstruction timeframes.

These were:

- a ten year period with value and growth portfolios being formed in 1986 and the cumulative excess returns on these portfolios being measured over the period 1987 to 1996;
- two five-year periods with portfolios formed in 1986 and 1990 and the results measured over the periods 1987 to 1991 and 1991 to 1996 respectively; and
- three three-year periods with portfolios formed in 1986, 1989 and 1992 and the results measured over the periods 1987 to 1989, 1990 to 1992 and 1993 to 1996 respectively.

The results of the three sets of period returns are shown in Table 4.4.

The methodology outlined so far measures the returns on the value and growth portfolio without taking risk into account. The following section discusses the manner in which this study combines risk and reward into a single measure.

3.10 Sharpe Ratios

This study uses the measure developed by Sharpe to combine risk and return into a single composite measure of performance (Sharpe, 1966).

The Sharpe portfolio performance measure is stated as follows:

$$S_i = (R_i - RFR_i) / SD_i$$

where:

S_i = Sharpe portfolio performance measure for portfolio *i*

R_i = the average rate of return for portfolio *i* during a specified period

RFR = the average rate of return on risk-free assets during a specified period

SD_i = the standard deviation of the rate of return for portfolio *i* during the time period

The Sharpe ratio measures the reward obtained per unit or risk. Reward is measured as the mean excess return calculated as the mean return on the portfolio minus the return on the 90 day Bankers Acceptance rate, which has been used as a proxy for the risk-free rate as discussed in section 3.6. The risk measured by the standard deviation of excess returns calculates the total risk of the portfolio.

Thus the Sharpe measure of portfolio performance evaluates both the systematic and unsystematic risk of the portfolio and therefore does not assume that the portfolio has been diversified. In this study, which makes no attempt to select diversified portfolios, a measure of total risk is considered to be more appropriate than those methods which assume a completely diversified portfolio and therefore, measure only systematic risk by using beta.

The Sharpe ratios for all equal weighted portfolios are shown in Table 4.1, Panel B and Table 4.4, Panels B,D and F.

3.11 Data Sources

Data was obtained from the following sources. Monthly closing share prices were obtained from the Deutsche Morgan Grenfell Research Network. Book values per share at the financial reporting date were obtained from the JSE Handbook. The book value per share in the JSE Handbook shows net worth per ordinary share based on a company's share capital and reserves adjusted for; rights attached to preference shareholders, market value of investments and certain intangible assets (JSE Handbook, 1996, p.4). The number of ordinary shares outstanding at financial year end was obtained from the JSE Bulletin. Finally, data on the Industrial Index and the 90 day Bankers' Acceptance rate was obtained from the I-Net, the Ivor Jones & Company database.

3.12 Limitations

This study has been unable to address all the issues that have been raised by researchers in this field. For example the role of firm size as identified by Banz (1981), as well as the other variables, discussed in Section 2.4, which have been shown to have predictive power to influence returns have not been examined. Furthermore, this study makes no attempt to investigate the possible interaction between the BE/ME ratio used in this study and these other variables.

Two potential sources of bias were identified in this study. There is potential for look-ahead bias, which occurs when accounting data is used for a data sample prior to that data being available to the public. The other source of bias is ex-post selection bias which occurs when the database used does not include firms which have ceased trading.

Look-ahead bias has been minimised by matching accounting data (i.e. book value per share) for financial year-ends in year t for June year-end companies and t-1 for December year-end companies to returns in the calendar year t+1. In South Africa, public companies are required to issue annual financial statements or failing that, to issue provisional annual financial statements within three months of their financial year end (The Companies Act 1973, s 304). Thus in all cases, accounting data should have been available for at least three months before the returns they are used to explain.

The data is clearly subject to ex-post selection bias as only shares that were listed for the entire period June 1986 to December 1996 were selected for the sample. No adjustments have been made for this bias as the number of insolvency's of listed companies in South Africa over this period is considered to have been minimal[2].

Finally, this study is also limited by sample size considerations. Comparative studies in this area utilise databases which contain significantly more data observations than this study which observes 58 companies over 120 months. Thus this study is more

[2] On average there were 3.2 liquidations per year in the period 1987 to 1996 (Extracted from Mc Gregors' annual publication, Who owns whom).

susceptible to bias due to the influence of outliers. Notwithstanding this, the number of observations in this study is considered to be sufficient, to be able to conclude on the observed results.

Therefore, although limitations do exist, they are unlikely to invalidate the findings of the research. These findings are detailed in Chapter 4.

CHAPTER 4

ANALYSIS OF FINDINGS

4.1 Introduction

The objective of this chapter is to present the findings, based on the methodologies reviewed in Chapter 3. In addition, the results are compared and contrasted to the findings of both US and International value-growth studies and an attempt is made to explain the differences observed.

4.2 Mean Excess Monthly Returns

As discussed in Section 3.6, the value and growth portfolios were constructed in two separate ways, firstly with an equal number of shares in each portfolio (equal weighted portfolios) and secondly with an equal capitalisation in each of the portfolios (capitalisation weighted portfolios). The mean excess monthly returns on each of these two value and growth portfolios are discussed separately below.

4.2.1 Equal Weighted Portfolios

The mean excess monthly returns for the years 1987 to 1996 for each of the value and growth portfolios selected on an equal weighting basis (see Section 3.7) and reformed each year are presented in Table 4.1, Panel A.[1]

The results show that the value portfolio outperformed the growth portfolio in the period 1993 to 1996, whilst the growth portfolio showed superior performance in the earlier 1988 to 1992 period. Only two of the four years in which the value portfolios

[1] All findings are shown in tables, presented at the end of Chapter 4.

showed superior returns were statistically significant and only one out of the five years in which growth outperformed value was significant. In 1987, the first period observed, the value portfolio showed a statistically higher return than the growth portfolio.

These results do not therefore, suggest any outright significant evidence of a value-growth phenomenon in South Africa similar to that found by the two non South African studies referred to in Chapter 3. Two separate distinct periods emerge, however, one in which growth outperforms value, being the period up to 1992 and a period post 1992 in which value outperforms growth.

Panel B of Table 4.1 shows the Sharpe ratios (see Section 3.10) for the equal weighted growth and value portfolios. Whilst the magnitude of the ratios are not particularly intuitive, they show the return achieved per unit of risk and indicate that the risk adjusted returns follow the same pattern of superior portfolios as the unadjusted returns. In 1987 the value portfolio provided the best result, from 1988 to 1993 growth outperformed value and post 1993 the value portfolio provided superior risk adjusted results. The only difference in the pattern of these results and the unadjusted results is in 1993 when the Sharpe ratios for the growth and value portfolios were 0.12 and 0.10 respectively. The differential in these two ratios in 1993 is the smallest observed over the ten years. Ignoring 1993 because of this small differential, the Sharpe ratios support the evidence presented in Panel A that growth outperformed value up to 1992 and that value outperformed growth in the post 1992 period even when adjusted for risk as measured by the variability of return.

4.2.2 Capitalisation Weighted Portfolios

The year by year mean excess monthly portfolio returns on the equal capitalisation weighted portfolios (see Section 3.6) presented in Table 4.2, Panel A, show a similar pattern of relative performance with respect to value and growth as the equal weighted portfolios discussed in section 4.2.1 above. Once again the value portfolio produced superior returns in 1987. Growth outperformed value in the period 1988 to 1992, with the exception of 1989, and post 1992 value portfolios showed the superior performance, with the exception of 1995.

Excluding Sasol Ltd from the sample, because of its relatively large capitalisation which may have distorted the above results, and recalculating the returns on the two equal capitalisation portfolios, indicates a similar pattern of relative performance as was found when Sasol Ltd was included.[2] The results are shown in Table 4.2, Panel B. The only difference between the two findings was in 1989, when, after excluding Sasol Ltd, the growth portfolio showed the superior performance. Thus the pattern of relative superior performance on the capitalisation weighted portfolios (excluding Sasol Ltd) more closely matches that of the equal weighted portfolios discussed in section 4.2.1 than when Sasol Ltd was included.

Thus the results of both the equal weighted and capitalisation weighted portfolio studies show a period up to 1992 when portfolios comprising growth shares outperformed portfolios of value shares. Post 1992 this trend is reversed and value

[2] In some years Sasol Ltd accounted for as much as a third of the total market capitalisation of the sample.

share portfolios outperform the growth portfolios in a manner which more closely resembles the international findings discussed in Section 3.2.

4.3 Cumulative Mean Excess Monthly Returns

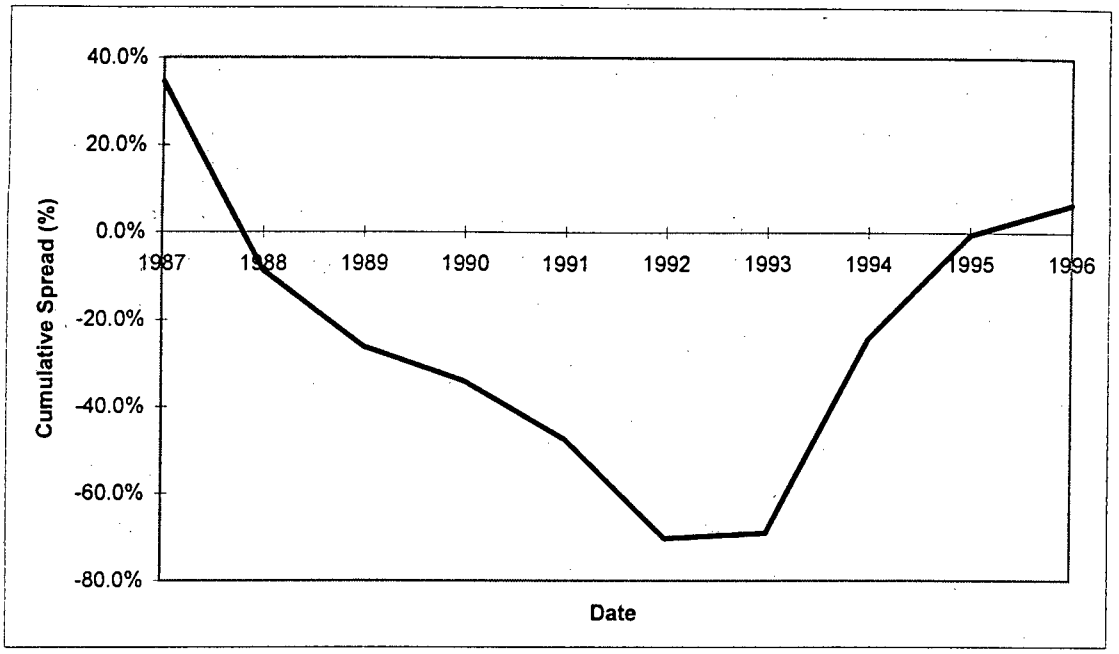
Table 4.3, Panels A through C show the cumulative values of the value-growth spreads (see Section 3.8) for each of the three methods of portfolio construction. The value-growth spread is the difference between the cumulative mean excess monthly returns on the value and growth portfolios. The results are similar for equal weighted portfolios (Panel A), equal capitalisation weighted portfolios (Panel B) and equal capitalisation weighted portfolios which exclude Sasol Ltd (Panel C). In all three cases the cumulative mean excess monthly return over the ten year period 1987 to 1996 is higher on the value portfolios.

4.3.1 Equal Weighted Portfolios

Of the three sets of cumulative results, those presented in Panel A and shown graphically in Figure 4.1 below, representing equal weighted portfolios, show the lowest cumulative spread between value and growth over the ten year period.

Over the ten year period, the value portfolio cumulatively outperformed the growth portfolio by 6.4% with a turnaround favouring value only occurring in 1996. This is as a result of the five years up to 1992 where the yearly growth returns were of a higher magnitude than the value returns in the four years post 1992. This can be seen from the return differences shown in the fourth column of Table 4.1, Panel A.

Figure 4.1: Equal Weighted Value-Growth Spreads



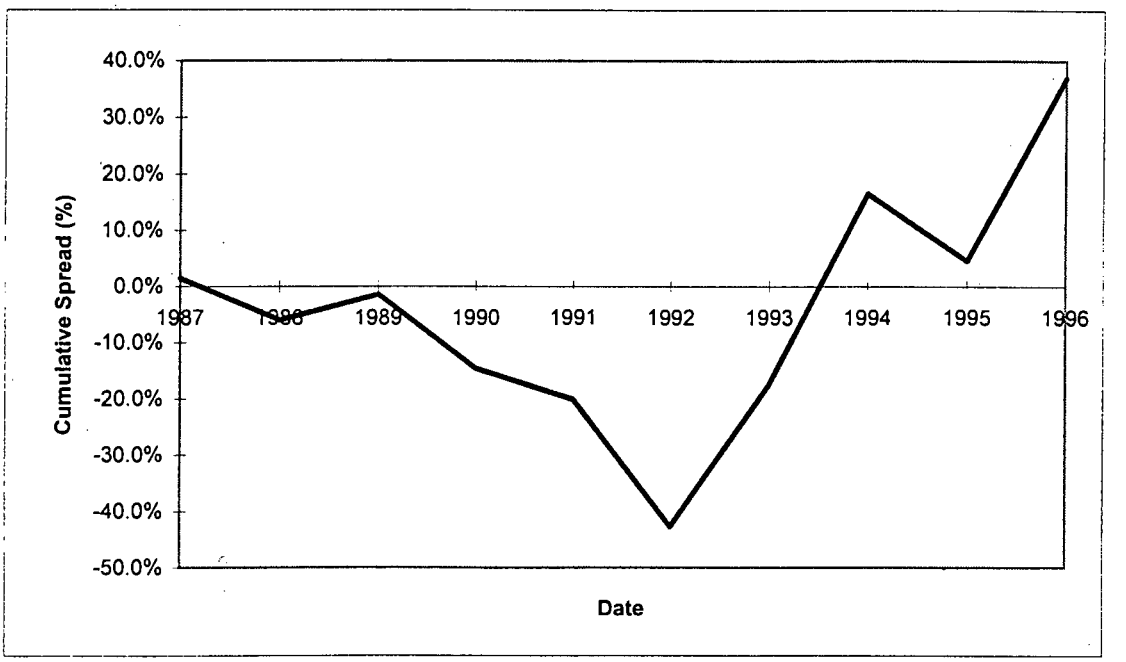
4.3.2 Capitalisation Weighted Portfolios

The cumulative value-growth spreads on the two equal capitalisation weighted portfolios presented in Table 4.3, Panels B and C, show a much clearer outperformance by the value portfolio. The cumulative value-growth spread on the capitalisation weighted portfolio (including Sasol) is presented graphically in Figure 4.2 below.

Both sets of results show that by 1994 the value portfolios have caught up to the earlier strong growth portfolio performance and by 1996 value has cumulatively outperformed growth by 37.0% and by 32.6% in the case of the equal capitalisation weighted portfolios, including and excluding Sasol Ltd respectively.

Thus these portfolios formed in the same manner as the international portfolios of Capaul et al (1993), present a similar result to their international results presented in Table 3.2. The South African cumulative spreads of 37.0% (or 32.6% excluding Sasol) are not as high as the 73.7% and 69.5% observed in France and Japan respectively, but are in more line with the respective 42.7% and 31.5% observed in Switzerland and the UK.

Figure 4.2: Capitalisation Weighted (including Sasol) Value-Growth Spreads



4.4 Period Returns

In Table 4.4, Panels A through F, the results of the tests where equal weighted portfolios are not reformed each year (see Section 3.8) are presented.

Panels A and B show the results of value and growth portfolios formed in 1986 and not reformed during the period 1987 to 1996. Over this ten year period the growth portfolio outperformed the value portfolio by 17.2%. This result however, was not statistically significant and furthermore, the Sharpe ratio of these portfolios shows that the value portfolio achieved a superior risk adjusted return, indicating greater risk on the growth portfolio.

In Panel C and D of Table 4.4, the five year returns on value and growth portfolios formed in 1986 and again in 1990, are presented. The five year period results, although not statistically significant, present a different picture than the results of the ten year period. In both of the five year periods value outperformed growth by a relatively large margin, 28.3% in the period 1987 to 1991 and 37.2% in the period 1992 to 1996. The Sharpe ratio however, indicates that after adjusting for risk, the growth portfolio showed the superior return in the first period. In the second period, 1992 to 1996 the value portfolio outperforms the growth portfolio both on an unadjusted and an adjusted risk basis. So once again, after 1992, value seems to provide a less ambiguous result of superior returns.

The study also reformed the equal weighted portfolios in 1986, 1989 and 1992 and calculated the returns over the subsequent three year holding periods. The results are presented in Table 4.4 Panels E and F.

In the first two periods, 1987 to 1989 and 1990 to 1992 the growth portfolios showed non statistically significant, superior returns. The Sharpe ratios for these two periods

show superior risk adjusted returns for value in the first period and for growth in the second. There is therefore, no agreement between the two measures in the first two periods. In the third period, 1993 to 1995, however, the value portfolio significantly outperforms the growth portfolio by a relatively large 64.8%. This result is corroborated by the Sharpe ratio which shows that the value portfolio also exhibited a higher risk adjusted return.

The period returns therefore indicate that when we look at the returns on portfolios formed less often than each year there is no clear evidence of superior value performance over the ten year or the early five or three year periods. However, periods beginning on or after 1992 indicate a clear superior performance by the value portfolio.

4.5 Summary of results

The observed results therefore show a period up to, and including 1992 where portfolios of growth shares outperform portfolios of value shares, in direct contrast to the results of the Capaul et al (1993) study which favours value portfolios in the entire period 1981 to 1992. Post 1992, however, the trend reverses and value portfolios show superior returns in line with the international studies referred to in Section 3.2. Possible causes for this observed turnaround after 1992 and the internationally inconsistent results found in the early period of the study are discussed in Section 4.6 below.

4.6. Causes of the superior value performance post 1992.

The previous section showed that post 1992, value portfolios outperformed growth portfolios in line with the international observations of value and growth performance. Whilst, in the period up to 1992 the growth portfolios showed superior performance contrary to what has been observed internationally. This section attempts to offer some explanations for this observed effect. A possible explanation relates to the fundamental changes, both political and economic, which occurred in the South African economy around this time in the early 1990's. The effect that different accounting practices in the US and South Africa may have on the results are also investigated.

4.6.1. Re-entry into the international community

During the period from 1949 up to the early 1990's the development of the corporate economy in South Africa was 'largely fashioned by certain aspects of the legal system of that era' (Botha, 1994, p.92). In this period, South Africa's political environment was determined by the policies of the Nationalist party which resulted in a unique socio-political situation whereby, through the statutes of apartheid, a majority of the population were excluded from participating in a wide range of political, economic and social activities. This resulted in increasing condemnation by the rest of the world and by the late 1980's South Africa was largely isolated from the global business and financial arena.

In February 1990 the African National Congress (ANC) and other black political organisations were unbanned and in April 1994 the ANC won the first democratic

elections in South Africa. Sometime between these two dates a process was started whereby South Africa re-entered the international community following the cessation of sanctions and a greater acceptance of the country as a business partner. In addition the new government's view, as was stated in its Reconstruction and Development Program (RDP), was that one of its central goals was to establish a strong, dynamic and balanced economy which would, inter alia, integrate into the world economy. (ANC - RDP document, 1994, p29).

Thus the combination of the world's re-acceptance of South Africa, and South Africa's acceptance of the world as a business partner resulted in the country becoming, once again, for the first time in several decades, a member of the international community. This re-acceptance applied equally to the financial markets which experienced increased investment by foreigners in South Africa.[3] Therefore it would be reasonable to expect that international financial trends, such as those that exist with regard to the relative returns on value and growth portfolios, should become apparent in South Africa. This is exactly what the observed data is showing, a clear outperformance by the value portfolio, in line with international trends, beginning after 1992.

4.6.2 Rate of Inflation

In the period observed, South Africa had two distinct periods with regard to inflation as shown in Table 4.5 below.

[3] Net foreign purchases of securities listed on the JSE were R548 million in 1989, negative in the period 1990 to 1992, R2 888 million in 1993 and had increased to R5 186 million by 1995 (South African Quarterly Bulletin, September 1997).

Until 1992, the country had a double digit rate of inflation with a 13.91% inflation rate in 1992. After 1992, the rate of inflation slowed down and was consistently below 10 %. By 1996 it had declined to 7.40%.

This pattern of inflation corresponds to the pattern of superior return on the portfolios of value and growth shares in South Africa as observed in this study. During the period up to 1992, during a time of high inflation, growth portfolios outperformed value portfolios, whilst post 1992, when inflation was low, value portfolios showed superior returns.

Table 4.5: Rates of Inflation in South Africa: 1987 to 1996 - Source: South African Reserve Bank Quarterly Bulletin.

YEAR	INFLATION RATE	YEAR	INFLATION RATE
1987	16.15%	1992	13.91%
1988	12.72%	1993	9.74%
1989	14.70%	1994	8.99%
1990	14.42%	1995	8.56%
1991	15.16%	1996	7.40%

During the period of the studies in the US by Fama and French (1992) and Capaul et al (1993), being 1963 to 1990 and 1981 to 1993 respectively, the US rate of inflation only rose above 10% in the few years prior to 1981. Post 1981, the rate of inflation

was, in all but one year, below 5%. Thus their studies, which both indicated superior performance for value portfolios, were largely conducted in an economy with a low rate of inflation.

Thus in the period of this study, when South African rates of inflation were relatively low and more in line with US rates, the results present a similar picture of superior portfolio returns to the US studies. High inflation, such as that experienced in South Africa up to 1992 may therefore, distort the results of this type of value-growth study. The distortion may result from market conditions and an investor psychology which exists in an inflationary environment and which may cause growth companies to thrive.

4.6.3 Measurement of Book Value

The accounting measurement of book value of a company must be taken into account when comparing the results of this study on the JSE and results of studies in the US. A fundamental difference between the US and South Africa in accounting for items which make up the book value of a company's assets is in respect of the valuation of property, plant and equipment.

In South Africa the revaluation of fixed assets is allowed in terms of Statement AC 123: Property, Plant and Equipment, which was issued in 1994. Prior to this Statement AC 106: Depreciation Accounting, also sanctioned fixed assets being reflected at an amount other than their historical cost. There is no such provision under US Generally

Accepted Accounting Practice for recognising increases in the value of fixed assets (Pereira,Paterson and Wilson, 1994).

Thus, in those cases where South African companies have chosen to revalue their assets, the book to market ratio may not have the same meaning as for US companies, which are prohibited from stating their assets at something other than depreciated cost. This does not however, explain the turnaround from superior growth portfolios to superior value portfolios observed in, or around 1992, as the treatment regarding the revaluation of assets in South Africa was consistent over the period of the study.

Approximately 75% of South African companies revalue some of their assets with property being the category of fixed asset most frequently revalued. Property is revalued by 68% of companies whilst items such as equipment and vehicles are only revalued by 15% and 4% respectively of South African companies (South African Institute of Chartered Accountants, 1992). Therefore excluding property, which does not in any case constitute the bulk of the assets of South African companies, revaluations should not significantly distort the book values used in this study.

Furthermore, a company which does revalue its assets would have a higher book value and consequently a higher book to market ratio than an equivalent company which does not revalue its assets. This would make the company that revalues more value orientated than the one that does not, whereas in fact it is no different as regards the underlying value and growth criterion. There is thus, a possibility that those companies that revalue their assets are incorrectly placed in value portfolios, and

following international evidence that value outperforms growth, returns of the value portfolio would be understated.

In summary, the different accounting treatment for the revaluation of assets that exists in the US and South Africa does not explain the turnaround in the portfolio returns observed in, or around 1992. Furthermore, its effect if anything, would lead to higher returns on the value portfolio and would perhaps diminish the superiority of the growth portfolios in the years up to 1992, as well as strengthening the observed value returns in the period post 1992.

4.7 Summary

The results of this study presented in this chapter, based on the methodologies outlined in chapter 3, indicate that post 1992 value shares outperformed growth shares.

The findings of this study however, do not exactly replicate the findings of the two international studies which this study is partially replicating. In the earlier years covered by the study, 1987 to 1992, growth portfolios largely outperformed value portfolios contrary to the international evidence. Similarity in the findings exist in the period post 1992, when portfolios formed of shares classified as value, outperform growth portfolios in line with internationally observed trends.

Whilst this study does not specifically attempt to explain the reasons for the observed turnaround from growth to value around 1992 it suggests that fundamental political

and economic factors which occurred around this time in South Africa may have played some part in the observed results. These factors include South Africa's return to the international financial arena and significant changes in macro-economic factors such as a decrease in the rate of inflation.

TABLE 4.1: EQUAL WEIGHTED PORTFOLIOS

PANEL A: MEAN EXCESS MONTHLY RETURNS

YEAR	GROWTH	VALUE	RETURN DIFFERENCE	SUPERIOR PORTFOLIO	t-STAT	p-VALUE
1987	0.74%	3.62%	2.88%	V	**-2.19**	**0.030**
1988	3.86%	0.26%	-3.60%	G	1.36	0.170
1989	2.16%	0.70%	-1.46%	G	1.72	0.090
1990	-0.47%	-1.13%	-0.66%	G	1.14	0.000
1991	1.93%	0.81%	-1.12%	G	1.13	0.250
1992	-0.23%	-2.13%	-1.90%	G	**2.18**	**0.030**
1993	1.04%	1.15%	0.11%	V	0.14	0.890
1994	2.02%	5.75%	3.73%	V	**-3.15**	**0.002**
1995	-0.46%	1.52%	1.98%	V	**-2.98**	**0.003**
1996	-2.20%	-1.62%	0.58%	V	-0.64	0.500

PANEL B: SHARPE RATIOS (EQUAL WEIGHTED PORTFOLIOS)

YEAR	GROWTH	VALUE	SUPERIOR RISK ADJ. RETURN
1987	0.05	0.18	V
1988	0.08	0.02	G
1989	0.19	0.06	G
1990	-0.05	-0.13	G
1991	0.18	0.05	G
1992	-0.02	-0.16	G
1993	0.12	0.10	G
1994	0.20	0.29	V
1995	-0.06	0.16	V
1996	-0.23	-0.12	V

Significant stastics:t-crit = 1.96 t-STATS in **bold** = significant

TABLE 4.2: EQUAL MARKET CAPITALISATION WEIGHTED PORTFOLIOS

PANEL A: MEAN EXCESS MONTHLY RETURNS (INCLUDING SASOL)

YEAR	GROWTH	VALUE	RETURN DIFFERENCE	SUPERIOR PORTFOLIO	t-STAT	p-VALUE
1987	-0.28%	-0.16%	0.12%	V	-0.12	0.906
1988	1.48%	0.86%	-0.62%	G	0.64	0.522
1989	1.74%	2.12%	0.38%	V	1.63	0.105
1990	-0.14%	-1.24%	-1.10%	G	0.29	0.772
1991	1.80%	1.34%	-0.46%	G	1.35	0.178
1992	-0.26%	-2.14%	-1.88%	G	0.81	0.421
1993	0.02%	2.12%	2.10%	V	0.75	0.227
1994	1.42%	4.26%	2.84%	V	0.18	0.850
1995	-0.32%	-1.32%	-1.00%	G	0.24	0.810
1996	-2.70%	0.00%	2.70%	V	**-3.07**	**0.003**

PANEL B: MEAN EXCESS MONTHLY RETURNS (EXCLUDING SASOL)

YEAR	GROWTH	VALUE	RETURN DIFFERENCE	SUPERIOR PORTFOLIO	t-STAT	p-VALUE
1987	-0.46%	1.02%	1.48%	V	-0.63	0.533
1988	2.18%	1.22%	-0.96%	G	1.03	0.303
1989	2.88%	2.10%	-0.78%	G	1.58	0.114
1990	-0.18%	-1.32%	-1.14%	G	0.23	0.820
1991	2.78%	0.78%	-2.00%	G	**2.81**	**0.006**
1992	-0.54%	-1.38%	-0.84%	G	-0.32	0.752
1993	-0.28%	2.66%	2.94%	V	-1.21	0.227
1994	1.28%	3.76%	2.48%	V	0.05	0.961
1995	-0.42%	-0.54%	-0.12%	G	-0.28	0.774
1996	-3.62%	-1.96%	1.66%	V	**-2.59**	**0.010**

Significant stastics:t-crit = 1.96 t-STATS in **bold** = significant

TABLE 4.3: CUMULATIVE MEAN EXCESS MONTHLY RETURNS

PANEL A: EQUAL WEIGHTED PORTFOLIOS

YEAR	CUM GROWTH	CUM VALUE	VALUE-GROWTH SPREAD
1987	8.9%	43.4%	34.5%
1988	55.2%	46.5%	-8.7%
1989	81.1%	54.9%	-26.2%
1990	75.5%	41.4%	-34.1%
1991	98.7%	51.1%	-47.6%
1992	95.9%	25.5%	-70.4%
1993	108.4%	39.3%	-69.1%
1994	132.6%	108.3%	-24.3%
1995	127.1%	126.6%	-0.5%
1996	100.7%	107.1%	6.4%

PANEL B: CAPITALISATION WEIGHTED PORTFOLIOS

YEAR	CUM GROWTH	CUM VALUE	VALUE-GROWTH SPREAD
1987	-3.4%	-1.9%	1.4%
1988	14.4%	8.4%	-6.0%
1989	35.3%	33.8%	-1.4%
1990	33.6%	19.0%	-14.6%
1991	55.2%	35.0%	-20.2%
1992	52.1%	9.4%	-42.7%
1993	52.3%	34.8%	-17.5%
1994	69.4%	85.9%	16.6%
1995	65.5%	70.1%	4.6%
1996	33.1%	70.1%	37.0%

PANEL C: CAPITALISATION WEIGHTED PORTFOLIOS (EXCL. SASOL)

YEAR	CUM GROWTH	CUM VALUE	VALUE-GROWTH SPREAD
1987	-5.5%	12.2%	17.8%
1988	20.6%	26.9%	6.2%
1989	55.2%	52.1%	-3.1%
1990	53.0%	36.2%	-16.8%
1991	86.4%	45.6%	-40.8%
1992	79.9%	29.0%	-50.9%
1993	76.6%	61.0%	-15.6%
1994	91.9%	106.1%	14.2%
1995	86.9%	99.6%	12.7%
1996	43.4%	76.1%	32.6%

TABLE 4.4: PERIOD RETURNS ON EQUAL WEIGHTED PORTFOLIOS

PANEL A: 10 YEAR PERIOD

PERIOD	GROWTH	VALUE	RETURN DIFFERENCE	SUPERIOR PORTFOLIO	t-STAT	p-VALUE
1987-1996	112.5%	95.3%	-17.2%	G	-0.37	0.714

PANEL B: SHARPE RATIOS (10 YEAR PERIOD)

PERIOD	GROWTH	VALUE	SUPERIOR RISK ADJ. RETURN
1987-1996	0.51	0.57	V

PANEL C: 5 YEAR PERIOD

PERIOD	GROWTH	VALUE	RETURN DIFFERENCE	SUPERIOR PORTFOLIO	t-STAT	p-VALUE
1987-1991	28.5%	56.7%	28.3%	V	1.38	0.166
1991-1996	-15.3%	21.8%	37.2%	V	-1.18	0.236

PANEL D: SHARPE RATIOS (5 YEAR PERIOD)

PERIOD	GROWTH	VALUE	SUPERIOR RISK ADJ. RETURN
1987-1991	0.07	0.05	G
1991-1996	0.03	0.05	V

PANEL E: 3 YEAR PERIOD

PERIOD	GROWTH	VALUE	RETURN DIFFERENCE	SUPERIOR PORTFOLIO	t-STAT	p-VALUE
1987-1989	81.9%	54.2%	-27.8%	G	0.752	0.452
1990-1992	-4.8%	-9.9%	-5.1%	G	0.284	0.776
1993-1995	33.7%	98.5%	64.8%	V	**-3.415**	**0.001**

PANEL F SHARPE RATIOS (3 YEAR PERIOD)

PERIOD	GROWTH	VALUE	SUPERIOR RISK ADJ. RETURN
1987-1989	0.08	0.10	V
1990-1992	-0.01	-0.02	G
1993-1995	0.10	0.19	V

Significant stastics:t-crit = 1.96 t-STATS in **bold** = significant

CHAPTER 5

CONCLUSION

5.1 THE RESEARCH STUDY

New research evidence suggests that share returns are cross-sectionally predictable in that shares which appear to be inexpensive relative to the company's underlying values (value shares), out-perform those shares that are perceived to provide substantial growth in the long run (growth shares). Although the international evidence appears to be conclusive that abnormal returns can be obtained by holding value shares, limited empirical testing has been done to establish whether or not this phenomenon is observed in South Africa.

The objective of this study which was defined in the introduction is 'to determine whether or not the value-growth phenomenon is evident in South Africa'.

The following null hypothesis was tested:

H_0 : The mean excess returns on value and growth shares are equal.

To accomplish this, the monthly mean excess returns on portfolios of value and growth shares, listed on the JSE, over the ten year period 1987 to 1996 were calculated and compared. The methodology followed, to some extent, that used in two previous value-growth studies (Fama and French (1992) and Capaul et al (1993)).

Shares were classified into value or growth portfolios by their relative ranking in terms of the ratio of their market value to book value of common equity. This study

constructed portfolios in two ways. Firstly, with an equal number of shares in each portfolio and secondly, with an equal market capitalisation in each portfolio.

Portfolios were reconstructed at various intervals (yearly, every three years, every five years and once only). The mean monthly excess returns were calculated for each of the value and growth portfolios in each of the interval tests and the t-statistic was calculated for each of these observations.

To combine risk and return into a single composite measure of performance the Sharpe ratio was calculated for each of the portfolios.

The mean excess monthly returns when calculated on a yearly basis show a period up to, and including 1992 where portfolios of growth shares outperform portfolios of value shares. Post 1992, however, the trend reverses and value portfolios show superior returns. This trend was apparent for both the equal weighted portfolios and the equal market capitalisation weighted portfolios. Thus only after 1992, does the relative value-growth share performance in South Africa appear to be in line with internationally observed trends.

The results of the tests where portfolios were reformed less often than each year show no clear evidence of superior value performance over the ten year period or the early five or three year periods. However, periods beginning on or after 1992, once again indicate a clear superior performance by value portfolios.

The Sharpe ratios for the value and growth portfolios show that the risk adjusted returns follow the same pattern of superior returns as exhibited by the unadjusted returns, discussed above. Thus not only does value outperform growth in the post 1992 period, it does so on a risk adjusted basis as well.

Furthermore, when the portfolio returns are measured on a cumulative basis over the ten year period, in each case the value portfolio cumulatively outperforms the growth portfolio. When the portfolios were constructed on a equal weighted basis the outperformance by the value portfolio is 6.4%, whilst when constructed on an equal capitalisation weighted basis the value cumulatively outperforms growth by 37.0%.

The observations of this study, particularly in the period post 1992, are therefore consistent with the international findings of Capaul et al (1993) and Fama and French (1992), that value shares outperform growth shares.

5.2 FUTURE RESEARCH

This study has identified a number of possible areas for further research in the area of value and growth investing. The more pertinent areas for further research are set out below.

Studies could be conducted to establish whether value shares outperform growth shares by using other measures of value and growth which have been shown elsewhere to explain the cross-section of returns, such as size, leverage and the price/earnings multiple.

A study of this sort could be extended to include a CAPM approach by calculating abnormal returns using a beta value.

This study could be enlarged to improve the quality of the results by including all companies listed on JSE and/or by observing a period of longer than ten years.

5.3 CONCLUSION

This study has gone some way in completing the picture as regards the somewhat neglected status of the value-growth phenomenon in South Africa. It has empirical findings which can be compared to those found internationally and has raised some doubts about the validity of the two major paradigms of modern finance, the Capital Asset Pricing Model and the Efficient Market Hypothesis. Finally, it has identified an investment approach that can potentially produce abnormal returns.

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APPENDIX A:

LIST OF COMPANIES USED IN THE STUDY

COMPANY NAME	SECTOR	YEAR END
AECI	COP	DEC
AFRICAN & OVERSEAS ENTERPRISES	CFT	JUN
ALPHA	BCA	DEC
ANGLO AMERICAN INDUSTRIAL	IH	DEC
ANGLOVAAL INDUSTRIES	IH	JUN
BERZACK BROTHERS	E	JUN
BIDVEST GROUP	IH	JUN
BRIAN PORTER HOLDINGS	M	JUN
BTR DUNLOP	IH	DEC
BURLINGTON INDUSTRIES	CFT	DEC
CADBURY SCHWEPPES (S.A.)	F	DEC
CHEMICAL SERVICES	COP	DEC
COATES BROTHERS (S.A.)	PP	DEC
CONCOR	BCA	JUN
CONSOL	PP	JUN
CONSOLIDATED FRAME TEXTILES	CFT	JUN
CULLINAN HOLDINGS	IH	JUN
DALYS	BHL	JUN
DELTA ELECTRICAL INDUSTRIES	EE	DEC
EDWARD L BATEMAN	E	JUN
FRAME GROUP HOLDINGS	CFT	JUN
FRASER ALEXANDER	E	JUN
GENERAL OPTIC CO	PM	JUN
GUBB AND INGGS	CFT	JUN
HAGGIE	E	DEC
HIGHVELD STEEL & VANADIUM CORP	SA	DEC
IRVIN & JOHNSON	F	JUN
KERSAF INVESTMENTS	BHL	JUN
KWV INVESTMENTS	BHL	JUN
MASONITE (AFRICA)	BCA	DEC
MCCARTHY GROUP	S	JUN
METIAR INVESTMENTS	M	DEC
METJE AND ZIEGLER	IH	JUN
MOBILE INDUSTRIES	T	JUN
MURRAY & ROBERTS HOLDINGS	IH	JUN
NAMIBIAN FISHING INDUSTRIES	F	DEC
NAMIBIAN SEA PRODUCTS	F	DEC
NINIAN & LESTER HOLDINGS	CFT	DEC
NORTHERN ENGINEERING INDUSTRIES AFRICA	E	DEC
OMNIA HOLDINGS	COP	DEC
PERSKOR GROUP	M	JUN
PUTCO	T	JUN

LIST OF COMPANIES USED IN THE STUDY (Continued)

COMPANY NAME	SECTOR	YEAR END
REX TRUFORM CLOTHING CO	CFT	JUN
SAFMARINE & RENNIES HOLDINGS	IH	JUN
SASOL	COP	JUN
SEARDEL INVESTMENT CORP	CFT	JUN
SM GOLDSTEIN	BCA	JUN
STELLENBOSCH FARMERS WINERY GROUP	BHL	JUN
SUN INTERNATIONAL (SA)	BHL	JUN
SUNCRUSH	BHL	JUN
TOWLES, EDGAR JACOBS	CFT	JUN
TOYOTA SOUTH AFRICA	M	DEC
TRENCOR	T	JUN
UNIHOLD GROUP	E	DEC
UTICO HOLDINGS	IH	DEC
WESCO INVESTMENTS	M	DEC
WOOLTRU	S	JUN
YORK TIMBER ORGANISATION	BCA	DEC

Index to sector codes

BCA	Building & Construction
BHL	Beverage, Hotel, Leisure
CFT	Clothing, Footwear, Text.
COP	Chemicals & Oils
E	Engineering
EE	Electronics, etc
F	Food
IH	Industrial Holdings
M	Media
PM	Pharmaceutical, Medical
PP	Pack & Print
S	Stores
SA	Steel & Allied
T	Transport